

LISTING OF CLAIMS

Although the claims are not amended by this submission, the below listing of claims is provided for ease of reference.

1-25. (Canceled)

26. (Original) A method of making symbol timing adjustments in a communications device including a transmitter which transmits multiple symbols in each of a plurality of dwells, the method comprising the step of:

determining the number of samples by which the symbol timing is to be advanced or delayed during a dwell;

increasing the number of samples in one of a first symbol and a last symbol of said dwell by the determined number of samples when said symbol timing is to be delayed during said dwell by the determined number of samples; and

decreasing the number of samples in one of the first symbol and the last symbol of said dwell by the determined number of samples when said symbol timing is to be advanced during said dwell by the determined number of samples.

27. (Original) The method of claim 26, wherein the number of samples in the remaining symbols in the dwell which includes said one of the first symbol and the last symbol of said dwell to which samples were added or removed to adjust symbol timing do not have their number of symbols changed as part of making symbol timing adjustments.

28. (Original) The method of claim 26,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein increasing the number of samples in said first symbol includes:

copying samples from the body portion of said first symbol and inserting the copied samples at the start of said first symbol thereby increasing the number of samples in said first symbol.

29. (Original) The method of claim 26,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein decreasing the number of samples in said first symbol includes:

removing samples from the start of the cyclic prefix portion thereby decreasing the number of samples in said first symbol.

30. (Previously Presented) The method of claim 26,

wherein said one of a first symbol and a last symbol of said dwell is said last symbol, the last symbol including a cyclic prefix portion and a body portion; and

wherein increasing the number of samples in said last symbol includes:

copying samples from the body portion of said last symbol and inserting the copied samples at the end of said last symbol thereby increasing the number of samples in said last symbol.

31. (Previously Presented) The method of claim 26,

wherein said one of a first symbol and a last symbol of said dwell is said last symbol; and wherein decreasing the number of samples in said last symbol includes:

removing samples from the end of said last symbol thereby decreasing the number of samples in said last symbol.

32. (Original) A communications device, comprising:

a transmitter which transmits multiple symbols in each of a plurality of dwells, the transmitter including:

means for determining the number of samples by which the symbol timing is to be advanced or delayed during a dwell;

means for increasing the number of samples in one of a first symbol and a last symbol of said dwell by the determined number of samples when said symbol timing is to be delayed during said dwell by the determined number of samples; and

means for decreasing the number of samples in one of the first symbol and the last symbol of said dwell by the determined number of samples when said symbol timing is to be advanced during said dwell by the determined number of samples.

33. (Original) The device claim 32,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein said means for increasing the number of samples in said first symbol includes:

means for copying samples from the body portion of said first symbol and inserting the copied samples at the start of said first symbol to thereby increase the number of samples in said first symbol.

34. (Original) The device of claim 32,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein said means for decreasing the number of samples in said first symbol includes:

means for removing samples from the start of the cyclic prefix portion to thereby decrease the number of samples in said first symbol.

35. (Previously Presented) The device of claim 32,

wherein said one of a first symbol and a last symbol of said dwell is said last symbol, the last symbol including a cyclic prefix portion and a body portion; and

wherein said means increasing the number of samples in said last symbol includes:

means for copying samples from the body portion of said last symbol and inserting the copied samples at the end of said last symbol thereby increasing the number of samples in said last symbol.

36. (Previously Presented) The device of claim 35,

wherein said one of a first symbol and a last symbol of said dwell is said last symbol; and wherein said means for decreasing the number of samples in said last symbol includes:

means for removing samples from the end of said last symbol thereby decreasing the number of samples in said last symbol.

37. (Previously Presented) A method for adjusting symbol timing in a first communications device in an Orthogonal Frequency Division Multiplexing system, the method comprising:

determining a receiver symbol timing adjustment to be made to adjust receiver symbol timing in said first communications device to synchronize receiver symbol timing to the symbol timing of a second communications device; and

adjusting the symbol timing of a transmitter in said first communications device as a function of said determined receiver symbol timing adjustment,

said step of adjusting the symbol timing of the transmitter including selecting one of a first and a last symbol in a dwell to be modified to adjust the transmitter symbol timing, said dwell being a period of time comprising multiple symbol times during which a tone or set of tones is used by the first communications device prior to switching to another tone or set of tones.

38. (Previously Presented) The method of claim 37, wherein said receiver symbol timing adjustment indicates that symbol timing should be adjusted by an amount corresponding to D digital signal samples.

39. (Previously Presented) The method of claim 38, wherein said step of determining a receiver symbol timing adjustment includes:

receiving a symbol timing correction signal transmitted from said second communications device.

40. (Previously Presented) The method of claim 38, wherein the first communication device is a wireless terminal.

41. (Previously Presented) The method of claim 40, wherein the second communication device is a base station.

42. (Previously Presented) The method of claim 41, further comprising:

determining an additional receiver symbol timing adjustment to be made to adjust receiver symbol timing of an additional receiver in said first communications device to synchronize the additional receiver symbol timing to be the symbol timing of a third communications device, said third communications device being an additional base station; and
adjusting the symbol timing of an additional transmitter in said first communications device as a function of said determined additional receiver symbol timing adjustment.

43. (Previously Presented) The method of claim 40, further comprising:

adjusting the symbol timing of a receiver included in said first communications device to delay said receiver symbol timing by said D samples; and

wherein the step of adjusting the symbol timing of said transmitter in said first communications device includes delaying the transmission of symbols by D samples by modifying the selected symbol by adding D samples to said selected symbol thereby increasing the duration of the selected symbol.

44. (Previously Presented) The method of claim 43, wherein symbols in said dwell other than said selected symbols are not changed as part of adjusting the symbol timing of said transmitter.

45. (Previously Presented) The method of claim 43, wherein the first symbol in said dwell is selected as said selected symbol, the selected symbol having N samples, the step of modifying the selected symbol by adding D samples including:

copying D samples from a body of said first symbol and inserting the D copied samples at the start of said selected symbol to produce a modified first symbol having N+D samples.

46 (Previously Presented) The method of claim 43, wherein the last symbol in said dwell is selected as said selected symbol, the selected symbol having N samples, the step of adjusting the symbol timing further including:

copying D samples from a body of said selected symbol and inserting the D copied samples at the end of said selected symbol to produce a modified last symbol having $N+D$.

47. (Previously Presented) The method of claim 40, wherein the step of adjusting the symbol timing of said transmitter in said wireless terminal includes:

adjusting the symbol timing of said transmitter included in said first communications device to advance the transmission of symbols.

48. (Previously Presented) The method of claim 47, wherein advancing the transmission of symbols includes the step of removing D samples from said selected symbol thereby decreasing the duration of said selected symbol.

49. (Previously Presented) The method of claim 48, wherein said selected symbol is the first symbol in said dwell, the selected symbol includes N samples beginning with a K sample cyclic prefix; and

wherein adjusting the symbol timing of said transmitter includes modifying said selected symbol by deleting D samples from the start of the K sample cyclic prefix of said selected symbol to produce a first modified symbol having $N-D$ samples, where N, D and K are positive non-zero integers.

50. (Previously Presented) The method of claim 48, wherein said selected symbol is the last symbol in said dwell, the selected last symbol having N samples; and

wherein adjusting the symbol timing of said transmitter includes modifying said selected symbol by deleting D samples from the end of said selected symbol to produce a modified last symbol having $N-D$ samples, where N and D are positive non-zero integers.

51. (Previously Presented) A mobile communications device for an Orthogonal Frequency Division Multiplexing system, comprising:

a clock;

receiver symbol timing control circuitry (208) coupled to said clock for determining a receiver symbol timing adjustment used to synchronize receiver symbol timing to the symbol timing of at least one broadcast signal;

transmitter symbol timing control circuitry coupled to said clock and to said receiver symbol timing control circuitry, the transmitter symbol timing control circuitry receiving symbol timing adjustment information from said receiver symbol timing adjustment circuitry

said transmitter symbol timing adjustment making a transmitter symbol timing adjustment in a direction which is the same as a receiver symbol timing adjustment made by said receiver symbol timing control circuitry;

said transmitter timing control circuitry including means for selecting a symbol to be lengthened or shortened prior to transmission to implement said symbol timing adjustment, said selected symbol being one of a first symbol and a last symbol in a dwell, said dwell being a period of time during which a transmitter of said mobile communications device remains on the same tone or being a period of time comprising multiple symbol tones on which said mobile communications device remains prior to switching to another tone or set of tones.

52. (Previously Presented) The mobile communications device of claim 51, wherein the symbol timing control circuitry further includes:

copy circuitry for performing a cyclic copy to be added samples to said selected symbol to be transmitted when said transmitter symbol timing is to be delayed; and

deleting circuitry for deleting samples from said selected symbol to be transmitted when said transmitter symbol timing is to be advanced.

53. (Previously Presented) The mobile communications device of claim 52, wherein said symbols are frequency division multiplexed symbols, the mobile communication device further comprising:

an antenna for transmitting symbols including a symbol whose duration has been changed by one of said copy circuitry and said deleting circuitry.

54. (Previously Presented) The mobile communications device of claim 51,

wherein said receiver symbol timing control circuitry includes means for independently determining symbol timing adjustments to be made when processing symbols corresponding to each of a first and a second base station; and

wherein said transmitter symbol timing control circuitry includes means for independently adjusting the symbol timing of symbols transmitted to the first and second base station, respectively, as a function of the symbol timing adjustments determined to be made when processing symbols corresponding to the first and second base stations, respectively.

55. (Previously Presented) A device comprising a processor, said processor including:

means for determining the number of samples by which the symbol timing is to be advanced or delayed during a dwell;

means for increasing the number of samples in one of a first symbol and a last symbol of said dwell by the determined number of samples when said symbol timing is to be delayed during said dwell by the determined number of samples; and

means for decreasing the number of samples in one of the first symbol and the last symbol of said dwell by the determined number of samples when said symbol timing is to be advanced during said dwell by the determined number of samples.

56. (Previously Presented) The device of claim 55, wherein the number of samples in the remaining symbols in the dwell which includes said one of the first symbol and the last symbol of said dwell to which samples were added or removed to adjust symbol timing do not have their number of symbols changed as part of making symbol timing adjustments.

57. (Previously Presented) The device of claim 55,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein said means for increasing the number of samples in said first symbol includes:

means for copying samples from the body portion of said first symbol and inserting the copied samples at the start of said first symbol thereby increasing the number of samples in said first symbol.

58. (Previously Presented) A memory device embodying computer executable instructions for controlling a communications device to implement a method of making symbol timing adjustments in the communications device, the method comprising the steps of:

determining the number of samples by which the symbol timing is to be advanced or delayed during a dwell;

increasing the number of samples in one of a first symbol and a last symbol of said dwell by the determined number of samples when said symbol timing is to be delayed during said dwell by the determined number of samples; and

decreasing the number of samples in one of the first symbol and the last symbol of said dwell by the determined number of samples when said symbol timing is to be advanced during said dwell by the determined number of samples.

59. (Previously Presented) The memory device of claim 58, wherein the number of samples in the remaining symbols in the dwell which includes said one of the first symbol and the last symbol of said dwell to which samples were added or removed to adjust symbol timing do not have their number of symbols changed as part of making symbol timing adjustments.

60. (Previously Presented) The memory device of claim 58,

wherein said one of a first symbol and a last symbol of said dwell is said first symbol, the first symbol including a cyclic prefix portion and a body portion; and

wherein the step of increasing the number of samples in said first symbol includes:

copying samples from the body portion of said first symbol and inserting the copied samples at the start of said first symbol thereby increasing the number of samples in said first symbol.

61. (Previously Presented) A memory device embodying computer executable instructions for controlling a first communications device to implement a method of adjusting symbol timing, the method comprising:

determining a receiver symbol timing adjustment to be made to adjust receiver symbol timing in said first communications device to synchronize receiver symbol timing to the symbol timing of a second communications device; and

adjusting the symbol timing of a transmitter in said first communications device as a function of said determined receiver symbol timing adjustment,

said step of adjusting the symbol timing of the transmitter including selecting one of a first and a last symbol in a dwell to be modified to adjust the transmitter symbol timing, said dwell being a period of time comprising multiple symbol times during which a tone or set of tones is used by the first communications device prior to switching to another tone or set of tones.

62. (Previously Presented) The memory device of claim 61, wherein said receiver symbol timing adjustment indicates that symbol timing should be adjusted by an amount corresponding to D digital signal samples.

63. (Previously Presented) The memory device of claim 62, wherein said step of determining a receiver symbol timing adjustment includes:

receiving a symbol timing correction signal transmitted from said second communications device.

64. (Previously Presented) A processor for use in a first communications device, said processor comprising:

means for determining a receiver symbol timing adjustment to be made to adjust receiver symbol timing in said first communications device to synchronize receiver symbol timing to the symbol timing of a second communications device; and

means for adjusting the symbol timing of a transmitter in said first communications device as a function of said determined receiver symbol timing adjustment,

said means for adjusting the symbol timing of the transmitter including means for selecting one of a first and a last symbol in a dwell to be modified to adjust the transmitter symbol timing, said dwell being a period of time comprising multiple symbol times during which a tone or set of tones is used by the first communications device prior to switching to another tone or set of tones.

65. (Previously Presented) The processor of claim 64, wherein said receiver symbol timing adjustment indicates that symbol timing should be adjusted by an amount corresponding to D digital signal samples.

66. (Previously Presented) The processor of claim 65, wherein said means for determining a receiver symbol timing adjustment includes:

means for receiving a symbol timing correction signal transmitted from said second communications device.